

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 8819 WO GI-AL	FOR FURTHER ACTION		See item 4 below
International application No. PCT/EP2005/002997	International filing date (<i>day/month/year</i>) 22 March 2005 (22.03.2005)	Priority date (<i>day/month/year</i>) 23 March 2004 (23.03.2004)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant ZF FRIEDRICHSHAFEN AG			

- This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).
- This REPORT consists of a total of 8 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.
- This report contains indications relating to the following items:

<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input checked="" type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input type="checkbox"/> Box No. VIII	Certain observations on the international application
- The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Date of issuance of this report 01 November 2006 (01.11.2006)
	Authorized officer Yolaine Cussac e-mail: pt11@wipo.int

PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing (day/month/year) **See form PCT/ISA/210**

Applicant's or agent's file reference

8819 WO GI-AL

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/EP2005/002997

International filing date (day/month/year)

22.03.2005

Priority date (day/month/year)

23.03.2004

International Patent Classification (IPC) or both national classification and IPC

F16H3/78

Applicant

ZF FRIEDRICHSHAFEN AG

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/EP2005/002997

Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐

This opinion has been established on the basis of a translation from the original language into the following language

_____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐

a sequence listing

☐

table(s) related to the sequence listing

b. format of material

☐

in written format

☐

in computer readable form

c. time of filing/furnishing

☐

contained in the international application as filed.

☐

filed together with the international application in computer readable form.

☐

furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-25	YES
	Claims		NO
Inventive step (IS)	Claims	1-25	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-25	YES
	Claims		NO

2. Citations and explanations:

1 Reference is made to the following documents:

D1: DE 31 31 138 A1 (ZAHNRADFABRIK
FRIEDRICHSHAFEN AG; ZAHNRADFABRIK
FRIEDRICHSHAFEN AG, 79) 24 February 1983
(1983-02-24)

D2: US 2003/199360 A1 (BIALLAS JEFFREY J) 23
October 2003 (2003-10-23)

D3: US 6 524 208 B1 (HOLLERMANN ERIKA ET AL) 25
February 2003 (2003-02-25)

D4: EP 1 389 696 A (JATCO LTD) 18 February 2004
(2004-02-18)

2 D1, which is cited by the applicant, is considered
the closest prior art. It discloses all the
features of the preamble of claims 1 and 2 (the
references between parentheses relate to said
document, figure 1):

a planetary gear mechanism (1), in particular
a dual clutch transmission in the design of a
planetary gear mechanism, having a plurality
of planet gear sets (I, II, III), having at
least two frictionally locking shift elements

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Box No. V

Reasoned statement under Rule 43bis 1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

(A, B) for connecting different power paths into a force flow, and having a plurality of positively locking shift elements (C, D, E, G, H, J) for setting different transmission ratios in the power paths, the frictionally locking shift elements (A, B) and the positively locking shift elements being arranged between shafts of the planet gear sets (I to III), a housing (4) and a transmission input shaft (1) and a transmission output shaft (2) in such a way that gear step changes can be carried out at least in a lower gear step range ("1" to "6") by means of the frictionally locking shift elements (A, B) with no interruption in tractive force, with at least one of the frictionally locking shift elements (A, B) being embodied as a clutch.

from which the subject matter of independent claim 1 differs in that:

a second planet gear set, a third planet gear set and a fourth planet gear set form a 3-web, 5-shaft transmission device formed with separate planet gears.

2.1 The subject matter of claim 1 is therefore novel (PCT Article 33(2)).

The problem addressed by the present invention can therefore be considered that of improving the efficiency of the transmission and reducing the

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

production costs.

- 2.2 The solution proposed in claim 1 of the present application for said problem involves an inventive step for the following reasons (PCT Article 33(3)):

although a 3-web, 5-shaft transmission device is known from D3 (planet gear sets 6, 7 and 4 in figure 1), said unit is not operated as a dual-clutch transmission (there is no alternating use of the clutches K1 and K2 for successive gears) and no positively locking shift elements can therefore be used.

- 3 The subject matter of independent claim 2 therefore differs from the disclosure of D1 in that:

a second planet gear set (P2), a third planet gear set (P3) and a fourth planet gear set (P4) form a reduced 3-web, 5-shaft transmission device, in which two planet gear sets are connected to one another, without stepping, by means of dual planet gears.

- 3.1 The subject matter of claim 2 is therefore novel (PCT Article 33(2)).

The problem addressed by the present invention can therefore be considered that of improving the efficiency of the transmission and reducing the production costs.

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INTERNATIONAL SEARCHING AUTHORITY

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Box No. V

Reasoned statement under Rule 43bis1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

3.2 The solution proposed in claim 2 of the present application for said problem involves an inventive step for the following reasons (PCT Article 33(3)):

although a 3-web, 5-shaft transmission device is known from D4 (gear sets G2 and G3 in figure 1), said unit is not operated via two power paths and no positively locking shift elements can therefore be used.

4 Claims 3-25 are dependent on claim 1 or 2 and therefore likewise meet the PCT requirements for novelty and inventive step.

WRITTEN OPINION OF THE
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Box No. VI Certain documents cited

1. Certain published documents (Rule 43bis.1 and 70.10)

Application No.
Patent No.

Publication date
(day/month/year)

Filing date
(day/month/year)

Priority date (valid claim)
(day/month/year)

2. Non-written disclosures (Rule 43bis.1 and 70.9)

Kind of non-written disclosure

Date of non-written disclosure
(day/month/year)

Date of written disclosure
referring to non-written disclosure
(day/month/year)

see form 210